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ABSTRACT

Ensuring that new forms of assessment are fair and valid for language minority students is essential for research on assessing the performance of Latino language minority elementary school students engaged in a cooperative learning language arts curriculum in Spanish and English. Strategies for developing performance assessments are described, and results from a preliminary study implementing these strategies as part of the curriculum for 39 bilingual and monolingual third graders are presented. The research shows how the design of individualized performance assessments might be devised based on ethnographic observation of the children's interaction and goals for cooperative learning established by the teacher. How analysis of children's interaction in cooperative learning can show "in situ" classroom assessments among the children that help validate interpretation of performance is also described. Three appendixes contain study questions, charts of change, and transcript conventions. (Contains 11 references.) (Author/SLD)

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Evaluation, Standards, and Student Testing

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Project 2.1 Designs for Assessing Individual and Group Problem Solving

Report of Preliminary Study on Cultural and Linguistic Influences on Group Interaction During Problem Solving

Improving Language Arts Assessment of Language Minority Students in Cooperative Learning Settings

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IMPROVING LANGUAGE ARTS ASSESSMENT OF LANGUAGE MINORITY STUDENTS IN COOPERATIVE LEARNING SETTINGS

Study on Cultural and Linguistic Influences on Group Interaction During Problem Solving

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Abstract

How can we ensure that new forms of assessment are fair and valid for language minority students? This key question undergirds our research on assessing the performance of Latino language minority elementary school students engaged in a cooperative learning language arts curriculum conducted in Spanish and English. This paper describes our strategies for developing performance assessments and goes on to present some results from a preliminary study implementing these strategies as part of the curriculum for bilingual and monolingual children in the third and fourth grades. Our research shows how design of individualized performance assessments might be devised based on ethnographic observation of children's interaction and the goals for cooperative learning interaction established by the teacher. We also describe how analysis of children's interaction in cooperative learning activity can show *in situ* classroom assessments among children, helping validate interpretation of the performances shown by children on individualized assessments.

Introduction

Current efforts to reform student testing call attention to the need for testing to become more integral with the everyday classroom instruction encountered by students and have begun to include elaborated discussion of fairness and equity issues (Darling-Hammond, 1994; LaCelle-Peterson & Rivera, 1994; Madaus, 1994). While efforts to develop new assessment methods have involved classroom teachers and researchers reflecting on everyday classroom practice and curriculum frameworks, the use of applied linguistics and qualitative research on classroom interaction to design and evaluate assessments has been limited.[1] The present report discusses the design and

[1] See Wilkinson and Silliman (1990) for a discussion of this topic from a sociolinguistic perspective and Hall, Knudsen, and Greeno (in preparation) for a discussion of this topic from the vantage of cognitive science analysis of situated action.

pilot implementation of a language arts assessment drawing on these methods with third- and fourth-grade elementary school students participating in a cooperative learning curriculum known as CIRC (Cooperative Integrated Reading and Composition; Madden, Slavin, & Stevens, 1986). The curriculum has been adapted for use with both English monolingual and Spanish-English bilingual elementary school students. We will refer to this modified curriculum as BCIRC following the convention established by the developers of the curriculum (Calderón, Hertz-Lazarowitz, & Tinajero, 1991). We wish to study, in particular, evidence that children become more competent in their performances over the school year in a manner that may reflect the work that they do together in cooperative learning activity during the year.

Thus, we are also concerned in our assessment research with analysis of cooperative learning interaction itself. From the theoretical perspective of cultural historical psychology, we hypothesize that children first develop individualized competence in thinking and language use through social participation in academic activities supporting the collaborative acquisition of thinking and language skills (Tharp & Gallimore, 1988). As children progress from little or no competence in a skill area, they begin to display competence in an area with the support of more capable others and the teacher. Interaction among students and the teacher should reveal this collaborative acquisition of skills quite directly. It should be evident in how students in cooperative groups approach and negotiate academic problem solving and in how they monitor and execute actions completing problem-solving tasks. In essence, the study of students' cooperative learning interaction becomes another avenue for framing the assessment of children's learning. By studying interaction we can make visible the moment-to-moment construction of learning performance and how this interaction itself reveals students' and a teacher's own assessment of learning.

Assessment Research Strategy

Our assessment research and development strategy is general, involves four steps, and is recursive. In Step 1 we begin by asking: What expectations do teachers establish for children's performance in the cooperative learning curriculum, and how might this information be used to identify constructs that merit attention in performance assessments of children's learning? We rely on ethnographic observation of the classroom in order to discern teachers'

goals and children's interpretation and pursuit of these goals within the classroom as a cultural community of practice.

In Step 2 we ask: What is the nature of the performances expected of students given the linguistic and cognitive demands of tasks and materials? Based on this analysis, we develop pre and post individualized assessment items that can capture students' mastery of intended performances in a target performance area over the course of the year. We then proceed to analyze and interpret change in children's performance from pre- to post-assessments and derive hypotheses about forms of cooperative group problem solving that might bear evidence about changes in children's performance.

In Step 3 of our program, we go on to conduct detailed discourse analytic and conversation analysis study of video tapes of children's cooperative learning interaction collected during the intervening period between individualized pre- and post-assessments. Our detailed analyses of the teacher's and children's interaction reveal evidence on how children's cooperation might address the performances expected of children by the teacher and whether this evidence corroborates the performances required by individualized pre- and posttests. The analyses of interaction, further, make visible forms of cooperative learning performance, capturing additional forms of face-to-face assessments enacted by students (and the teacher) that are represented by or may go beyond the individualized pre- and post-assessments presented to students.

In Step 4 of our assessment program, we reflect on new ways to direct the design of assessments and ways to make the previous assessment results and new assessment design relevant to teachers and children.

The BCIRC Curriculum[2]

The BCIRC cooperative learning curriculum is built around "Treasure Hunt" story reading units, available in Spanish as well as English. Regardless of language, students in mixed-ability cooperative groups of 4 to 5 pupils participate in the same core set of Treasure Hunt activities. Core activities include a discussion of target vocabulary terms helping to preview the content of a story, silent and then dyadic oral reading of the first part of a

[2] Implementation of the BCIRC curriculum has been supported by a research grant from the Center for Effective Schooling of Disadvantaged Students, Johns Hopkins University.

story, and group discussion and individualized written answering of story questions for Part 1. The final question for Part 1 of a story is a prediction question. The second part of a Treasure Hunt proceeds in the same way as the first part, except that there is no further vocabulary introduction and there is no built-in requirement of a final prediction question. Additionally, once Part 2 is completed, students are asked to discuss in groups and individually compose story-related essays. Other activities distributed across days include student coordinated testing of vocabulary spelling and meaning, and story recall. A complete Treasure Hunt cycle takes a minimum of four days, but can be extended to up to two weeks if teachers decide to build in supplemental instructional activities.

Step 1: Ethnographic Observation and Selection of Assessment Constructs

The BCIRC curriculum is complex. Our identification of constructs for a performance assessment has been deliberately selective. While we could have easily opted for a portfolio-level collection and scoring of products generated over the course of an entire Treasure Hunt or series of Treasure Hunts, we have instead, focused thus far on specific linguistic skills that teachers expect of students in their performance of Treasure Hunt question discussion and answering activities. We have chosen this strategy for the present because we wish to focus on particular kinds of performance that might be reflected in teachers' curriculum goals, and that might be studied in detail, to reflect bilingual students' development of critical academic language skills in English. We elected question discussion and answering activities and how students generate written answers to questions because all our teachers placed emphasis on this issue in guiding students' cooperative group and individual performance. In addition, the issue is well-recognized in the sociolinguistic and literacy research as significant to children's development of an academic written discourse style that requires transforming children's existing knowledge of how to interact in oral conversation (Collins & Michaels, 1986; Gumperz, 1986).

The issue of answering questions in complete sentences in academic assignments is also important because it applies regardless of bilingual children's language of instruction. The skill in question is part of the common underlying academic language competencies expected of students regardless of language (Cummins, 1984). As such, it also raises the possibility that once

students attain competence in the skill in the first language, attaining competence in the skill in the second language can build on the same competency in the first language.

We have broken down the design of an individualized performance assessment of complete sentence answering into three subareas: (a) ability to "echo" a question in the answer reply, regardless of whether a reply is a complete sentence; (b) writing the answer as a complete sentence regardless of echoing; and (c) expressing acceptable and anticipated meaning in the content of the answer. In this paper we report our progress on only the first of these three subareas. Our selection of question echoing with complete or incomplete question replies was sensitive to the performance criteria established by teachers. Our ethnographic observations from the previous year revealed that teachers expended considerable attention in providing students with direct instruction and modeling in this skill area. Teachers explicitly told students that they were to start out group discussion of how to answer a Treasure Hunt question by deciding what portion of a question had to be included in the initial framing of a question answer. Students were then instructed to fill in the remaining part of the answer based on information requested by the echoed portion of the reply. In addition to modeling this process for students, teachers also introduced underlining of the portion of the question to be included in the reply as an aid for students to keep track of what was expected of them. Some teachers had students use a yellow marking pen for this purpose.

We have distinguished assessment of students' simple ability to produce complete sentence answers (subarea b) from their ability to produce complete and incomplete sentences with differing degrees of echoing a question in a reply (subarea a). Even though teachers emphasized that a good question reply would begin with an echoing of the question, students independently might first attempt to master writing an answer that was a complete sentence without worrying about echoing. In our assessment work we wanted to handle this matter by developing a separate scoring system for their answer replies. Also, as work proceeds, we will investigate alternative syntactic models for coding students' replies that will allow us to characterize specific ways in which competence in echoing combines with competence in writing a complete sentence answer and with the semantic acceptability of an answer.

Step 2: Design and Administration of Pre- and Post-Assessment Item and Interpretations of Performance

Our design of individualized pre- and post-assessments of echoing drew on a linguistic study of the structure of questions encountered by students in the BCIRC curriculum. We took into consideration major grammatical question types encountered by students on Treasure Hunts. Those identified included "Wh" ("who," "when," "why," "what") and "how" questions in English and their corresponding analogs in Spanish. We also examined questions according to their clausal and phrasal complexity (e.g., occurrence of subordinate and compound clauses, and occurrence of adverbial and adjectival phrases).

Based on these analyses, we constructed pre- and post-assessment items in Spanish and English drawn from our project's pool of Treasure Hunt story passages and questions not previously used by children. Each test consisted of a several-paragraph story segment divided in two parts, each accompanied by four questions.

The pre-assessment was administered in late October and the post-assessment in early May. The pre-assessment was not a "pure" pre-assessment in that children had begun to be exposed to BCIRC at the start of October. Administration of pre-assessments after introduction would be clearly undesirable if we had intended a formal evaluation of BCIRC effects. We were not overly concerned with start-up of BCIRC just prior to our pre-assessment because of the pilot character of our work and because we were not formally evaluating BCIRC. We believe that prior exposure to BCIRC before the pre-assessment had negligible effects on assessment performance because the BCIRC curriculum is so complex that teachers had not had an opportunity to expose students to specific question answering strategies so early on in introducing the curriculum.

The story segment and question items on the pre- and post-assessments were identical in format to those encountered by students in everyday classroom Part 1 and Part 2 Treasure Hunt activities. However, on the pre- and post-assessments, students were administered these materials as individual assignments to be completed within a one-hour time period and without recourse to cooperative group discussion of questions and answers.

Pre- and post-assessments were administered to 2 third-grade bilingual classrooms. One classroom was a bilingual Spanish-English (BCL) classroom (N=16) and the other was a monolingual English classroom with some students from Spanish language backgrounds (ECL) (N=23). The assessments were administered to the students in their language of instruction. Our analysis focused on the students' answers to four pre-assessment and four post-assessment questions that were matched for their grammatical similarity (Appendix 1).[3]

Students' answers for the four pre-assessment and post-assessment question pairs were analyzed for the ways in which students were seen to be using the written question as a resource for their written answer. Six response categories were formulated:

1: No Echo

2: Elliptical Echo

3: Minimal Echo

4: Unintegrated Echo

5: Echo with Syntactic Repetition

6: Complete Echo

These categories are not intended to represent an interval scale of developmental competence in written discourse. Rather, they represent our judgment of ordinal-level differences regarding students' ability to integrate the structure of the prompting question into their written answer. While our assessment of echoing is not the same as an analysis of the grammatical completeness of question responses, our examination of data suggests that students scoring high on the echoing scale must, of necessity, be producing grammatically complete sentence answers when they incorporate parts of the question's syntax and lexicon into their answer. We now present a discussion of the meaning of echoing response categories.

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[3] The pre- and posttests were derived from texts appropriate to the reading level of the third-grade students. The pretest story is a bilingual folk tale from Mexico called *The Cuckoo's Reward / El Premio del Cuco* and adapted and translated by Daisy Kouzel. The posttest story, *The Boy of the Three-Year Nap*, written by Dianne Synder, was translated into Spanish by our research staff. Both texts were selected because they contained canonical three-part story grammars: a protagonist encounters a problematic situation, this problem culminates as the story events unfold, and the problem is resolved.

A "no echo" response does not contain any identifiable structures from the question. Typically "no echo" responses are elliptical and very conversational in quality. That is, the question "Where are you going?" is appropriately answered in conversation with "to school." A grammatically complete response (I am going to school) in conversation would be a marked response. Examples of "no echo" responses for the pretest prediction question

What do you think the loud crackling noise that the owl hears is?

¿A qué crees que se debe la fuerte crepitación que oye la lechuza?

were:

101[4]: porque ya venía el fuego a quemar las semillas
(because the fire already came to burn the seeds)

127: because the fire

The part of the question that would count as an echoing response, the base question, is "The loud crackling noise is . . . ". By repeating this phrase, the student enables the answer to stand alone as semantically complete and not depend upon reference to a prior prompt (in this case, the question itself). The adjectival noun phrase "that the owl hears" is an optional echo component as is the phrase "I think." As the data show, neither student 127 nor student 101 refer in any way to how "the fire" or the coming of the fire "venía el fuego" is related to the crackling noise elicited in the question. As a result, the reader of the answer does not have any way of knowing the significance of the answer "fire."

"No echo" responses were relatively infrequent as students seem to overwhelmingly rely upon their conversational skills to respond elliptically to the prompting question in their written answers. The second category, "elliptical echo," contained answers with a syntax that is dependent upon the syntax of the base question for its completeness. In other words, an elliptical answer elliptically refers to the question. Some "elliptical echo" responses for pretest question 2:

[4] Numbers preceding response statements are subject identifiers.

What did Chac ask the birds to help him do?
¿Qué les pidió Chac a los párjaros que le ayudara a hacer?

were:

108: que al amanecer que fueran adonde estaban las flores y agarraran todas las semillas y las pusieran cerca del bosque (to at dawn to go to where the flowers were and gather all the seeds and put them near the forest)

110: recojan las semillas porque si no ya no vamos a tener comida. (gather the seeds because if not then we are not going to have food)

141: plant seeds for a new crop so the birds don't go hungry.

147: to help him plant seeds before the fire god comes.

Each of these responses shows an orientation to the question's syntactic structure. The information solicited by the question is the action that the Chac asked the birds to do. This corresponds to the following echo answer frame (optional phrases are in parenthesis):

a. Chac asked the birds to (help him) + infinitive

b. Chac les pidió a los pájaros que le ayudara a + infinitive

or

c. Chac les pidió a los pájaros que + subjunctive verb phrase

Students 141 and 110 begin their written answer with the complementary infinitive verb form that visibly orients the answer as a continuation of the question frames shown above in (a) and (c). Student 141's response is a continuation of the infinitival verb phrase prompted by the question (to + infinitive), whereas student 110's response shows a dependency on a prior clause in its subjunctive conjugation. Further evidence of the attached-to-the-question nature of elliptical responses is found in responses 108 and 147. Here, the students have incorporated the initial phrase marker of the question's syntax. Response 108 incorporates the "to" that heads an infinitival verb phrase and 147 repeats the "que" that characterizes it as a subordinate verbal phrase.

When students refer to the question's syntax and repeat its verbal and lexical forms, it became more clear that their writing process included an explicit reference to the prompting question. When one or more phrases from the question are repeated in the answer, a "minimal echo" response was coded. Some "minimal echo" responses for pretest question 5:

What did the owl see when he flew above the trees?
¿Qué vio la lechuza cuando voló sobre los árboles?

were:

106: Vio el dios de fuego corriendo todos los lados.
(He saw the Fire God running all over the place.)

115: La lechuza miró mucho humo.
(The owl looked at a lot of smoke.)

141: The fire god burning the trees.

148: The fire god running through the trees with the torch.

These responses show a minimal echo of the question in their repetition of either the subject (the owl/la lechuza) as in 115, the verb phrase (saw/vio) on a lexical and/or temporal level as in 106, or a direct object (the trees) as in 141 and 148.

It should be emphasized that the coding scale is descriptive of categories that arose upon inspection of a particular aspect of the students' written responses, that of the repetition or incorporation of the question's syntax and lexicon in the answer's syntax. Therefore, a minimal echo response is not intended to necessarily allude to the students' ability to write a complete grammatical sentence. Nonetheless, as mentioned earlier, we did find a strong correlation to exist between the grammatical completeness of the answer and the echo of the question.

Some students incorporated selected parts of the question's syntax in their answer; however, the syntax was not fluid or smooth. These echo answers were described as "unintegrated echoes." Consider posttest question 5 and the targeted part of the question to be included in the question shown below:

What does the ujigami tell the merchant to do?

The ujigami tells the merchant + infinitival verb phrase

¿Qué le dice el ujigami al comerciante que haga?

El ujigami le dice al comerciante que + subjunctive verb phrase

The unintegrated echo responses to this question showed the students to be relying upon two strategies to write the answer. First, they are selecting parts of the question with which to begin and frame the answer. Second, in a task separate from writing the answer frame, the students "add on" the answer to the answer frame. The unintegrated characteristic of the completed written answer lies in the students' use of connectors to achieve the link between the separately formulated answer frame and answer. Some unintegrated echo responses to this question are:

106: El ujigami le dice al comerciante que haga es que su hija case con Taro.
(The ujigami tells the merchant to do is that his daughter marries Taro.)

152: I think that the ujigami told the merchant to do was that he must make his daughter marry the boy of the Three-Year Nap or he will turn her into a pot.

Clearly, the students are repeating the question in their answer, but their strategy to do this involves the use of the connecting verb phrase "is that/es que" which transforms the answer frame into the subject of the sentence. That is, from a complex (2-clause) question, the student simplifies the syntax of the answer through the use of this connector that converts the answer into a simple (1-clause) Subject-Verb-Object format corresponding to Answer Frame-Connector-Answer.

Another strategy the students were seen to rely upon in using the question to formulate their answer was the contiguous placement of a would-be elliptical response with the answer frame. This results in an "echo with syntactic repetition." Some echo responses with syntactic repetition for posttest question 5:

What does the ujigami tell the merchant to do?

¿Qué le dice el ujigami al comerciante que haga?

are:

103: Le dice el ujigami al comerciante que haga que case a su hija con Taro.
(The ujigami tells the merchant to do to marry his daughter with Taro.)

107: Le dice el ujigami al comerciante que haga case a su niña con Taro.
(The ujigami tells the merchant to do marry his daughter with Taro.)

121: The ujigami tells the merchant to do by saying to let Taro get married with his daughter.

A complete echo response was one in which the base question's syntax and lexicon are used to appropriately frame the answer. The responses below constitute complete echo answers to posttest question 5 listed above.

101: El ujigami le dijo que se casara con su hija y Taro.
(The ujigami told him to marry his daughter and Taro.)

132: The ujigami told the merchant to let Taro and his daughter get married.

155: The ujigami told the merchant to make his daughter marry a fine lad named Taro.

Also within the category of complete echo, the students may have incorporated an adequate echo of the base question with a manipulation of the question's syntax. Most commonly, this manipulation involves the use of pronouns for full noun phrases or synonymical lexicon. Some manipulated complete echo responses for the posttest question:

Why do you think no one has called Taro "The Boy of the Three-year Nap" in a long time?

¿Por qué crees que por mucho tiempo nadie ha llamado a Taro "El muchacho de la siesta de tres años"?

are:

118: Taro is not called that anymore because he does not take naps.

132: I don't think anyone has called him that because of the work he's been doing.

In responses 118 and 132, the name Taro was called, "The Boy of the Three-year Nap," is replaced by the referent "that" in a manipulation that transforms the question's syntax into an answer.

Contingency Table Results

Appendix 2 displays two-way contingency tables summarizing the pre- and post-assessment echoing performance of students from the two target classrooms on each of the four paired question sets. These tables graphically summarize growth in students' ability to echo questions in written answers to questions over the school year. The levels of the columns represent the echoing score (1 to 6) earned by students on their written response to a pre-assessment question. The row levels represent the echoing score earned by students on their written response to a paired post-assessment question. The first set of tables, labeled "Simon," corresponds to students assessed in Spanish on both the pre-assessment and post-assessment. ("Simon" is the surname of the teacher of this bilingual classroom where instruction was in Spanish at the start of the school year.) The second set of tables, labeled "Hug," corresponds to students assessed in English on both pre-assessment and post-assessment ("Hug" is the surname of the teacher of this monolingual English classroom).

The bivariate distribution of pre- and post-assessment echoing scores for students assessed in Spanish (Simon's classroom data) shows evidence of development in students' echoing across the school year for all four question pairs. Almost all of the table entries are at or below the diagonal, indicating that students maintained or exceeded their pre-assessment echoing scores on the post-assessment. The bivariate distribution of pre- and post-assessment echoing scores for students assessed in English (Hug's classroom data) also shows development in students' ability to echo questions in their written responses to questions across the school year. The results for students in the monolingual English classroom do not show as much dramatic increase as those for students assessed in Spanish and attending a bilingual classroom.

More students in the monolingual English classroom started out the year with strong ability to echo questions in written answers to questions.

Step 3: Interaction Analysis of Cooperative Learning Showing Discussion of Echoing by Teacher and Students

The results of the pre- and post-assessment show clear evidence of changes in children's capacity to echo questions in written answers on individualized assessments. In addition, and independently, BCIRC students under investigation can be seen to interactionally achieve the formulation of the written answer to a question within their peer group cooperative learning activities. Through an interaction analysis of their peer group activity, we have isolated several episodes that illustrate the teacher's instruction in the peer group to incorporate the question into the answer and the students' application of this practice. Example 1 shows the teacher coming into a peer group and explicitly outlining the steps in the question-answering process (see Appendix 3 for transcription conventions).

(1) [1/26/93 f. 32]

Teacher: okay, let's do the first one,
(R>) what are some of the new noises
in Peter's house (<R)
what is the part that we're gonna to underline,
Albert: °the [new noises°
Alicia: [°the new noises°
[SOME
Teacher: [Emmanuel,
Albert: SOME, some of the new [noises
Teacher: [GOOD,
some of the new noises,
so underline that,
some of the new noises in Peter's house ARE,
((points to Albert)) what's your answer,

Moments later, the teacher guides the students' answering of the next question. In Example 2, her strategy is slightly altered and the underlined

part of the question is not explicitly elicited or referred to until this frame has been conversationally formulated by the "start" of the answer.

(2) [1/26/93 f. 33]

Teacher: {R>} why do you think [Peter] is getting angry, {<R}
Alicia: [°why]
Teacher: how's that answer gon[na start,?]
Albert: [°do you°]
Jorge: because
Albert: do YOU think Peter is angry, [»yes he]'s angry«
Teacher: [why,]
Teacher: why do you think-
Jorge: because the wish [bo-]
Teacher: [wait] a minute, when I say
WHY do you think, what is your answer going to be,?
Albert: why do you think Peter's angry=cuz all the an- animals
are doing, [like making noise]
Teacher: [»wait a minute,wait«] a minute. why
do you think (.) what [is your answer going to be,?]
Emmanuel: [because we are t(h)inking]
Teacher: start the answer, just start the answer.
Teacher: why do you think
Emmanuel: ((raises his hand)) oh, I know, because i- [be]cause
Teacher: [no]
Jorge: I think
Teacher: ah, you hear how he started the answer? (0.2) what did he say?
Albert: ah
Emmanuel: I think
Teacher: I think, so that's how you're gonna start, I: think,
and you're gonna underline, I think Peter is getting
angry becau:se ((underlines))

Example 3 illustrates how Davina relies upon the underlining strategy to guide her through the answering of the question "How do we know that dinosaurs ever existed?" In Davina's highlighted turn, she has trouble

formulating an answer to the question. As a result, she resorts to the underlining task as a part of the answering task ("what are we gonna underline"). After selecting the answer's frame from the question's syntax, Davina orients to the answering task ("an the answer").

(3) [5/19/93 f. 38]

Davina: kay read it
Yolanda: .hh how do we kno:w that (.) dinosaur (0.1) ever
existed?
(1.2) ((Davina raises hand))
Davina: uhm they ever existed (.) no, be:cu::z (0.1)
yeah that- who who uhm (.) uhm, what's gonna
be the thi- (.) what are we gonna underline,?
George: [we know that dinosaurs ever existed]
Davina: [we know that dinosaurs ever existed because]
Yolanda: [we know that dinosaurs ever existed because]
there was
(0.2)
Yolanda: nothing, [du::h.]
Davina: [(an') the] answer.

Example 4 shows the students relying upon their conversational skills to orally answer the question in an elliptical manner.

(4) [5/19/93 f. 39]

George: (R>) how big was a bria[tric] ((shakes head 'no'))
Sonia: [hah?]
(0.1)
George: [brontosaurus] (<R)
Davina: [brontosaurus]
George: [seventy five feet tall]
Davina: [seventy five feet tall] huh,?
Yolanda: ((into microphone)) seventy fi:ve feet tall

Example 5 below shows the interaction as it proceeds. The students are seen to reformulate or reframe their answer into a complete sentence syntax by using the question in their answer. Davina initiates this task by prompting the others to focus on "the thing" or the answer's frame. Both she and George alternately propose candidate answer frames until Sonia produces what would be a complete manipulated echo on the last line of the transcript.

(5) [5/19/93 f. 39]

Davina: and the thing is uhm
George: ho::w was a
Davina: how big wa:s a: brontosaurus
George: °no
Davina: so it's gonna be the biggest was a binanasaurous,
[it was]
George: [no::], not like that, how was a brontosaurus
(0.6)
Sonia: how BI:G was it,?
Davina: number three [go]
Sonia: ((raises hand)) [»I] know I know«
Yolanda: ((into microphone)) how BIG was it
Sonia: it was a (.) seventy five foot long.

Step 4: New Directions in the Design of Assessments Relevant to Teachers and Students

Our study has shown that the form of the students' written products is the result of acquired courses of action as instructed by the teacher. Namely, the students incorporate parts of the question into the answer as a result of the teacher's instructions to "underline" the part of the question that frames the answer. Skills assessments then should be formulated to reflect the interactions that teacher and students have as they construct teaching and learning activity.

One innovation in the assessment of interactions as they reflect and produce particular individual students' products is to analyze students' interactions in relation to the product that resulted from the interaction.

Further, we need to examine more carefully how students' interactions represent their own self-assessment. Our assessment design needs to capture this facet of interaction. This assessment design, if tied to feedback to the student by a teacher shown interaction analyses, would potentially enable students to better use their peers as resources in the completion of an individual task. What this means for teachers is that they can be trained to "see" productive interactions and to evaluate for themselves the dynamic of cooperative learning peer groups.

We envision in the next phase of our research changing our pre- and post-assessment procedures so that students are allowed to interact while answering assessment questions. By analyzing students' interaction on the pre- and post-assessments we can gain further evidence of how their conversational and discourse skills might contribute to their written answers over the school year. Further, we could also compare the pre- and post-assessment performance of these students with that of other students who follow the current pre- and post-assessment procedure.

In addition, we are undertaking steps to develop a more comprehensive linguistic model of question answering. In this report we have examined one facet of competence in writing answers to questions. We are currently developing a more sophisticated linguistic model of question answering that will also assess students' competence in integrating echoing with complete sentence answers and appropriate semantic responses to questions.

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Appendix 1: Pre- and Post-Assessment Question Pairs

1. **pretest prediction question:**

   What do you think the loud crackling noise that the owl hears is?

   ¿A qué crees que se debe la fuerte crepitación que oye la lechuza?

   posttest question prediction:

   What do you think Taro's plan is?

   ¿Cuál crees que es el plan de Taro?

2. **pretest question 2:**

   What did Chac ask the birds to help him do?

   ¿Qué les pidió Chac a los pájaros que le ayudara a hacer?

   post-test question 5:

   What does the ujigami tell the merchant to do?

   ¿Qué le dice el ujigami al comerciante que haga?

3. **pretest question 6:**

   Why do you think the cuckoo worked so hard to save the seeds?

   ¿Por qué crees que el cuco trabajó tanto para salvar las semillas?

   posttest question 7:

   Why do you think no one has called Taro "The boy of the Three-Year Nap" in a long time?

   ¿Por qué crees que por mucho tiempo nadie ha llamado a Taro "El muchacho de la siesta de tres años"?

4. **pretest question 5:**

   What did the owl see when he flew above the trees?

   ¿Qué vio la lechuza cuando voló sobre los árboles?

   posttest question 1:

   Where do Taro and his mother live?

   ¿Dónde viven Taro y su madre?

APPENDIX 2

Simon Pre-test Q2 to Post-test Q5: What, Complex

Pre-Test	Post-Test 1	2	3	4	5	6
6				x		xx
5					x	
4						x
3						x
2		x		xx	xxx	xx
1					x	

Simon Pre-test Q4 to Post-test Q4: What, Complex

Pre-Test	Post-Test 1	2	3	4	5	6
6						xxx
5						
4						
3				x		xxx
2						xxxxxx
1				x		xx

Simon Pre-test Q6 to Post-test Q7: Why, Complex

Pre-Test	Post-Test 1	2	3	4	5	6
6						x
5						
4						
3						
2		xxx		x		xxxxxxxxx
1		x	x			

Simon Pre-test Q5 (What) to Post-test Q1 (Where): Simple

Pre-Test	Post-Test 1	2	3	4	5	6
6	x					xxxxxx
5						x
4						x
3						xxxxx
2						
1						xx

APPENDIX 2 (CONTINUED)

Hug Pre-test Q2 to Post-test Q5: What, Complex

Pre-Test							
6		xx	x		x	xxxxxxxxx xxxx
5						
4						xx
3						
2					x	xx
1						
	1	2	3	4	5	6

Post-Test

Hug Pre-test Q4 to Post-test Q4: What, Complex

Pre-Test						
6						xxxxxxxxx xxxx
5						
4						
3						
2						xxxxxxx
1						xx
	1	2	3	4	5	6

Post-Test

Hug Pre-test Q6 to Post-test Q7: Why, Complex

Pre-Test						
6		xxx				xxxxxxx
5						
4						xx
3						
2		x				xxxxxxx
1			x			x
	1	2	3	4	5	6

Post-Test

Hug Pre-test Q5 (What) to Post-test Q1 (Where): Simple

Pre-Test						
6	xxxxx					xxxxxxxxx xxxx
5						
4						x
3						
2						x
1	x					x
	1	2	3	4	5	6

Post-Test

Appendix 3

Transcription Conventions

[ ]	overlapping speech
( )	unsure hearing
(( ))	transcriber's and analyst's comments
{R>} {<R}	reading aloud
:	lengthened pronunciation
?	final rising intonation
,	listing intonation (e.g. more is expected)
.	final falling intonation
(.)	micropause
(0.2)	two tenths of a second pause
M Y	stressed pronunciation
=	latching of speaker's utterances
-	truncation (e.g. what ti- what time is it?)
°bye	softly spoken
>goodbye<	rapidly spoken in relation to surrounding talk
.h	in breath